Amendments To The Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) Device for resistivity soundings on water covered subsurfaces (3) comprising a multi-channel towing cable (1), which tows along a water covered subsurface (3), with an array of electrodes including a first current electrode (9), a second current electrode (11) and ~~a number of~~ at least three voltage electrodes [[,]] ~~whereby the voltage electrodes are~~ positioned between the first and second current electrodes (9, 11) [[.]],

whereby neighboring voltage electrodes (14 and 15, 15 and 18, 18 and 19, 19 and 20) are separated from each other by distances (21, 22, 23, 24) along the cable (1) that decrease from the first current electrode (9) towards the second current electrode (11),

whereby the first current electrode (9) is separated from a neighboring first voltage electrode (14) by a distance (16) that is at least equal to the distance (17) between the second current electrode (11) and a second voltage electrode (15) that is located between the first voltage electrode (14) and the second current electrode (11) and,

whereby further voltage electrodes (18, 19, 20) are located between the second voltage electrode (15) and the second current electrode (11),

whereby the voltage electrodes (14, 15, 18, 19 and 20) are connected to each other such that a voltage gradient can be measured across at least two pairs of neighboring voltage electrodes (14 and 15, 15 and 18, 18 and 19, 19 and 20) forming pairs of neighboring voltage electrodes having one voltage electrode (15, 18, 19) in common.

Claim 2. (Canceled)

3. (Original) Device according to claim 1, whereby the first current electrode (9) is located nearby a first end (4) of the cable (1) that is connected to a vessel (2).

4. (Original) Device according to claim 1, whereby the second current electrode (11) is located nearby a second end (10) of the cable (1) that is connected to a vessel (2).

Claims 5-11. (Canceled)

12. (Currently Amended) Method ~~according to claim 11~~for measuring the apparent resistivity of water covered subsurfaces including the steps of

(*i*) towing a multi-channel cable (1) along the water covered subsurface (3), whereby said cable (1) has an array of

electrodes comprising a first current electrode (9), a second current electrode (11), and a number of voltage electrodes (14, 15, 18, 19, 20) located between the current electrodes (9, 11),

(*ii*) generating an electrical field (12, 13) between the current electrodes (9, 11) by injecting an electrical current,

(*iii*) measuring of a voltage gradient associated with the generated electrical field (12, 13) between at least two pairs of neighboring voltage electrodes (14 and 15, 15 and 18, 18 and 19, 19 and 20) that are coupled through a common voltage electrode (15, 18, 19), whereby the neighboring voltage electrodes (14 and 15, 15 and 18, 18 and 19, 19 and 20) are being separated from each other by a distance (21, 22, 23, 24) that decreases from the first current electrode (9) towards the second current electrode (11),

(*iv*) calculating the resistivity as a function of depth beneath the water covered subsurface, whereby noisy apparent resistivity curves, resulting from voltage measurements between the common voltage electrode (15, 18, 19) and two neighboring voltage electrodes (14, 15, 18, 19, 20) due to noise on the common voltage electrode (15, 18, 19), are corrected in accordance with adjacent resistivities in order to obtain a smooth apparent resistivity curve.

13. (Currently Amended) Method ~~according to claim 11~~ for measuring the apparent resistivity of water covered subsurfaces including the steps of

(*i*) towing a multi-channel cable (1) along the water covered subsurface (3), whereby said cable (1) has an array of electrodes comprising a first current electrode (9), a second current electrode (11), and a number of voltage electrodes (14, 15, 18, 19, 20) located between the current electrodes (9, 11),

(*ii*) generating an electrical field (12, 13) between the current electrodes (9, 11) by injecting an electrical current,

(*iii*) measuring of a voltage gradient associated with the generated electrical field (12, 13) between at least two pairs of neighboring voltage electrodes (14 and 15, 15 and 18, 18 and 19, 19 and 20) that are coupled through a common voltage electrode (15, 18, 19), whereby the neighboring voltage electrodes (14 and 15, 15 and 18, 18 and 19, 19 and 20) are being separated from each other by a distance (21, 22, 23, 24) that decreases from the first current electrode (9) towards the second current electrode (11),

(*iv*) calculating the resistivity as a function of depth beneath the water covered subsurface, whereby noise on the common voltage electrode (15, 18, 19), resulting in

deviated voltage measurements at two pairs of voltage electrodes (14 and 15, 15 and 18, 18 and 19, 19 and 20) coupled through the common voltage electrode (15, 18, 19), is removed by compensating the measurements according to the following equation

$$s2 = -s1 \times K1 / K2$$

where K1 and s1 are the geometrical factor and the resistivity noise related to a first resistivity value obtained by measuring the voltage gradient between the first pair of voltage electrodes (14 and 15, 15 and 18, 18 and 19, 19 and 20), and K2 and s2 are the geometrical factor and the resistivity noise related to the second resistivity value obtained by measuring the voltage gradient between the second pair of voltage electrodes (14 and 15, 15 and 18, 18 and 19, 19 and 20).

14. (Currently Amended) Method according to ~~claim 8~~ claim 12 or 13, whereby the cable (1) is towed by a vessel (2) substantially parallel to the water covered subsurface, such that the first current electrode (9) is located nearby the vessel (2) and the second current electrode (11) is located remote from the vessel (2).

15. (Currently Amended) Method for measuring the apparent resistivity of water covered subsurfaces including the steps of

(*i*) towing a multi-channel cable (1) substantially parallel to the water bed (3), whereby said cable (1) has an array of electrodes comprising a first current electrode (9), a second current electrode (11) and at least three voltage electrodes (14, 15, 18, 19, 20) located in between the current electrodes (9, 11),

whereby the first current electrode (9) is positioned more remote from the voltage electrodes (14, 15, 18, 19, 20) than the second current electrode (11), such that the first current electrode (9) is located at a distance (16) from a first voltage electrode (14) that is at least equal to the distance (17) between the second current electrode (11) and a second voltage electrode (15) that is located between the first voltage electrode (14) and the second current electrode (11),

whereby further voltage electrodes (18, 19, 20) are located between the second voltage electrode (15) and the second current electrode (11),

whereby neighboring voltage electrodes (14 and 15, 15 and 18, 18 and 19, 19 and 20) are being separated from each other by a distance (21, 22, 23, 24) that decreases from the

first current electrode (9) towards the second current electrode (11),

(*ii*) generating an electrical field (12, 13) between the current electrodes (9, 11) by injecting an electrical current,

(*iii*) measuring a voltage gradient associated with the generated electrical field (12, 13) between at least two pairs of voltage electrodes (14, 15, 18, 19, 20), whereby the distance (21, 22, 23) between the voltage electrodes of a first pair of neighboring voltage electrodes is larger than or equal to the distance (22, 23, 24) between the voltage electrodes of a second pair of neighboring voltage electrodes located closer to the second current electrode (11) and whereby the pairs of neighboring voltage electrodes (14 and 15, 15 and 18, 18 and 19, 19 and 20) are coupled through a common voltage electrode (15, 18, 19),

(*iv*) calculating the resistivity as a function of depth beneath the water covered subsurface.

Claims 16-22. (Canceled)

23. (New) Method according to claim 12 or 13, whereby a first voltage electrode (14) is located at a distance (16) from the first current electrode (9) that is at least equal to the distance (17) between the second current

electrode (11) and a second voltage electrode (15) that is located between the first voltage electrode (14) and the second current electrode (11), and whereby further voltage electrodes (18, 19, 20) are located between the second voltage electrode (15) and the second current electrode (11).

24. (New) Method according to claim 12 or 13, whereby a voltage gradient is measured between pairs of neighboring voltage electrodes (14 and 15, 15 and 18, 18 and 19, 19 and 20).